WHAT IS CLAIMED IS:

1. A method for determining vision defects and for collecting data for correcting vision defects of the eye by interaction of a patient with an examiner, said method comprising:

projecting an image into the eye of the patient with an adaptive optical system; said adaptive optical system comprising at least one adaptive optical element; said at least one adaptive optical element being configured to have its optical characteristics changed by an electrical signal, in an attempt to minimize distortions of the image as perceived by the patient;

determining the presence of distortions of the image as perceived by the patient by interaction of the patient with the examiner;

providing an electronic control system; said electronic control system being configured to control the optical characteristics of said at least one adaptive optical element through outputting of an electrical signal;

modifying the optical characteristics of said at least one adaptive optical element through outputting of an electrical signal of said electronic control system and obtaining a modified image of the image in the eye of the patient, in an attempt to correct for the distortions of the image as perceived by the patient;

evaluating said modified image by interaction of the patient with the examiner;

repeating said modifying step and said evaluating step and obtaining a modified image having minimized distortions as perceived by the patient;

determining the optical characteristics of said at least one adaptive optical element, as modified, resulting from said modified image having minimized distortions as perceived by the patient; and

computing vision correcting data for the eye being examined, from said optical characteristics of said at least one adaptive optical element, as modified, resulting from said modified image having minimized distortions as perceived by the patient.

2. The method according to Claim 1, wherein:

said adaptive optical system comprises a micromirror device operatively connected to said electronic control system;

said micromirror device comprising a plurality of micromirrors;

said micromirrors comprising arrangements configured to respond to output signals from said electronic control system; and said micromirrors being configured to change the optical characteristics in response to output signals from said electronic control system;

said micromirrors being configured to generate signals indicative of the modified optical characteristics of said micromirrors resulting from said modified image having minimized distortions as perceived by the patient;

said method comprising:

providing electrical signals from said electronic control system to said micromirrors to change the optical characteristics of said micromirrors; and

providing signals from said micromirrors indicative of the modified optical characteristics of said micromirrors to an arrangement for computing vision correcting data for the eye being examined.

3. The method according to Claim 2, wherein:

said micromirrors are configured to be moveable to and stoppable in a plurality of positions between a first extreme position and a second extreme position opposite from said first extreme position;

said method comprising:

moving said micromirrors from a first position corresponding to an image projected into the eye of the patient to a second position corresponding to a modified image having minimized distortions as perceived by the patient.

4. The method according to Claim 3, wherein:

said adaptive optical system is configured substantially as a segment of a sphere;

said method comprising:

projecting an image onto said optical system configured substantially as a segment of a sphere; and

reflecting an image from said adaptive optical system substantially configured as a segment of a sphere, into the eye of the patient.

5. The method according to Claim 4, wherein:

each micromirror is configured to be moved by a membrane; said membrane being configured to be actuated by a force of one: an electrostatic arrangement, a piezo-electric arrangement, and a bimorph membrane arrangement;

said method comprising:

moving said membrane by one of: an electrostatic force, a piezo-electric force, and a bimorph membrane force.

6. The method according to Claim 1, comprising:

determining aberrations of the eye of the patient with an aberrometer device configured to measure aberrations of the eye of the patient;

obtaining data indicative of the aberrations of the eye of the patient; and

correlating said data from said aberrometer indicative of the aberrations of the eye of the patient, with said vision correcting data computed from said at least one adaptive optical element, as modified.

7. The method according to Claim 6, wherein:

said aberrometer device comprises a Shack-Hartmann sensor.

8. The method according to Claim 7, wherein:

said electronic control system comprises a computer configured to compute vision correcting data using a Taylor polynomial and/or a Zernike polynomial;

said method comprising:

computing vision correcting data, using a Taylor polynomial and/or a

Zernike polynomial, on the basis of said data from said aberrometer indicative of the aberrations of the eye of the patient, and said vision correcting data computed from said at least one adaptive optical element, as modified; and

applying corrective treatment to the eye being examined.

9. A method for determining vision defects and for collecting data for correcting vision defects of the eye by interaction with a patient, said method comprising:

forming an image in the eye of the patient with an optical system; said optical system being configured to have its optical characteristics changed by at least one signal, in an attempt to minimize distortions of the image as perceived by the patient;

determining the presence of distortions of the image as perceived by the patient by interaction with the patient;

providing an electronic control system being configured to control the optical characteristics of said optical system through outputting of at least one signal;

modifying, at least once, the optical characteristics of said optical system through outputting of at least one signal of said electronic control system and obtaining a modified image of the image in the eye of the patient, in an attempt to correct for the distortions of the image as perceived by the patient by interaction with the patient;

determining the optical characteristics of said optical system, as modified, resulting from said modified image of the image in the eye of the patient having minimized distortions as perceived by the patient; and

computing vision correcting data for the eye being examined, from at least one signal indicating said modified optical characteristics of said optical system.

10. The method according to Claim 9, wherein:

said optical system comprises a micromirror device operatively

connected to said electronic control system;

said micromirror device comprises a plurality of micromirrors;

said micromirrors comprise arrangements configured to respond to output signals from said electronic control system; and said micromirrors being configured to change the optical characteristics in response to output signals from said electronic control system;

said micromirrors are configured to generate signals indicative of the modified optical characteristics of said micromirrors resulting from said modified image of the image in the eye of the patient having minimized distortions as perceived by the patient;

said method comprising:

providing at least one electrical signal from said electronic control system to said micromirrors to change the optical characteristics of said micromirror device; and

providing at least one signal from said micromirrors indicative of the modified optical characteristics of said micromirrors to an arrangement for computing vision correcting data for the eye being examined.

11. The method according to Claim 10, wherein;

said micromirrors are configured to be moveable to and stoppable in a plurality of positions between a first extreme position and a second extreme position opposite from said first extreme position;

said method comprising:

moving said micromirrors from a first position corresponding to an image formed in the eye of the patient to a second position corresponding to a modified image formed in the eye of the patient having minimized distortions as perceived by the patient.

12. The method according to Claim 11, wherein:

said optical system is configured substantially as a segment of a sphere;

said method comprising:

projecting an image onto said optical system configured substantially as a segment of a sphere; and

reflecting an image from said optical system configured substantially as a segment of a sphere, into the eye of the patient.

13. The method according to Claim 12, comprising one of:

(a.) each micromirror is configured to be moved by a membrane; said membrane being configured to be actuated by a force of one of: an electrostatic arrangement, a piezo-electric arrangement, and a bimorph membrane arrangement;

said method further comprising:

moving said membrane by one of: an electrostatic force, a piezo-electric force, and a bimorph membrane force;

(b.) determining aberrations of the eye of the patient with an aberrometer device configured to measure aberrations of the eye of the patient;

obtaining data indicative of the aberrations of the eye of the patient; and

correlating said data from said aberrometer indicative of the aberrations of the eye of the patient, with said vision correcting data computed from said optical system, as modified, resulting from said modified image formed in the eye of the patient having minimized distortions as perceived by the patient;

(c.) said aberrometer device comprises a Shack-Hartmann sensor; and

(d.) said electronic control system comprises a computer configured to compute vision correcting data using a Taylor polynomial and/or a Zernike polynomial;

said method further comprising:

computing vision correcting data, using a Taylor polynomial and/or a Zernike polynomial, on the basis of said data from said aberrometer indicative of the aberrations of the eye of the patient, and said vision

correcting data computed for the eye being examined from said optical system, as modified; and

applying corrective treatment to the eye being examined.

14. The method according to Claim 12, comprising all of:

(a.) each micromirror is configured to be moved by a membrane; said membrane being configured to be actuated by a force of one of: an electrostatic arrangement, a piezo-electric arrangement, and a bimorph membrane arrangement;

said method further comprising:

moving said membrane by one of: an electrostatic force, a piezo-electric force, and a bimorph membrane force;

(b.) determining aberrations of the eye of the patient with an aberrometer device configured to measure aberrations of the eye of the patient;

obtaining data indicative of the aberrations of the eye of the patient; and

correlating said data from said aberrometer indicative of the aberrations of the eye of the patient, with said vision correcting data computed from said optical system, as modified. of the patient;

(c.) said aberrometer device comprises a Shack-Hartmann sensor; and

(d.) said electronic control system comprises a computer configured to compute vision correcting data using a Taylor polynomial and/or a Zernike polynomial;

said method further comprising:

computing vision correcting data, using a Taylor polynomial and/or a Zernike polynomial, on the basis of said data from said aberrometer indicative of the aberrations of the eye of the patient, and said vision correcting data computed from said optical system, as modified; and

applying corrective treatment to the eye being examined.

15. Apparatus for determining vision defects and for collecting data for correcting vision defects of the eye by interaction between a patient and an examiner, said apparatus comprising:

an adaptive optical system configured to form an image in the eye of the patient;

said adaptive optical system being configured to have its optical characteristics changed by at least one signal, in an attempt to minimize distortions of the image as perceived by the patient;

an electronic control system operatively connected to said adaptive optical system;

said electronic control system comprising an arrangement configured to modify, at least once, the optical characteristics of said adaptive optical system, and being configured to output at least one signal to obtain a modified image, in an attempt to correct for the distortions of the image as perceived by the patient through interaction with the patient;

an arrangement configured to determine the optical characteristics of said adaptive optical system, as modified, resulting from said modified image formed in the eye of the patient having minimized distortions as perceived by the patient; and

apparatus configured to compute vision correcting data for the eye being examined, from at least one signal indicating said modified optical characteristics of said adaptive optical system.

16. The apparatus according to Claim 15, wherein:

said adaptive optical system comprises a micromirror device operatively connected to said electronic control system;

said micromirror device comprising a plurality of micromirrors;

said micromirrors are configured to individually change optical characteristics in response to output signals from said electronic control system independently of an adjacent micromirror;

said micromirrors are configured to generate signals indicative of the modified optical characteristics of said micromirrors resulting from said

modified image formed in the eye of the patient having minimized distortions as perceived by the patient.

17. The apparatus according to Claim 16, wherein:
said micromirrors are configured to be moveable to and stoppable in a plurality of positions between a first extreme position and a second extreme position opposite from said first extreme position.

18. The apparatus according to Claim 17, wherein:
said adaptive optical system is configured substantially as a segment of a sphere.

19. The apparatus according to Claim 18, comprising one of:
(a.) each micromirror is configured to be moved by a membrane; said membrane being configured to be actuated by a force of one of: an electrostatic arrangement, a piezo-electric arrangement, and a bimorph membrane arrangement;
(b.) an aberrometer device configured to measure aberrations of the eye of the patient;
(c.) an aberrometer device comprising a Shack-Hartmann sensor; and
(d.) said electronic control system comprises a computer configured to compute vision correcting data using a Taylor polynomial and/or a Zernike polynomial on the basis of data from said aberrometer indicative of the aberrations of the eye of the patient, and vision correcting data computed from said adaptive optical system, as modified.

20. The apparatus according to Claim 18, comprising all of:
(a.) each micromirror is configured to be moved by a membrane; said membrane being configured to be actuated by a force of one of: an electrostatic arrangement, a piezo-electric arrangement, and a bimorph membrane arrangement;
(b.) an aberrometer device configured to measure aberrations of the

eye of the patient;

(c.) said aberrometer device comprises a Shack-Hartmann sensor; and

(d.) said electronic control system comprises a computer configured to compute vision correcting data using a Taylor polynomial and/or a Zernike polynomial on the basis of data from said aberrometer indicative of the aberrations of the eye of the patient, and said vision correcting data computed from said adaptive optical system, as modified.